



# **Presentations and Abstracts for the Dissolved Oxygen – Total Maximum Daily Load Project**

## **Report 6.1.1**

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## **Introduction**

As part of the contract agreement under Task 6.3, technical presentations were made to stakeholders, including the Regional Board, and at regional and national scientific meetings. As practiced in prior studies, the Grantee and staff accommodated requests to attend meetings and present project results at technical and administrative meetings. Presentations were made to the Department of Fish and Game, the Regional Board, the State Board, or any other state agency requesting information. The results from these meetings were used in the adaptive management process.

## **Methods**

Presentations, both oral and poster, were submitted as abstracts to regional, national, and international conferences in 2012, 2013, and 2014. Following the consolidation of data into master files that were QA checked, statistical analyses were performed to identify notable trends in the data. Notable trends were then verified and reported by the scientist that discovered the trends and review by the Principle Investigator prior to conference submission.

## **Summary**

As of May 2014, 25 presentations were submitted to the scientific community describing the work and results of the DO TMDL project. In 2012, the presentation topics included zooplankton and phytoplankton growth, use of isotopes to determine nitrogen sources, total maximum daily load (TMDL) estimations, modeling and prioritization. In 2013, results of the *Microcystis* bloom, improved load estimates were presented, and interactions between zooplankton and phytoplankton were presented. In 2014, presentations on WARMF and LinkNode models, improved load estimates, and methodologies to evaluate dissolved oxygen

impairment were or are scheduled to be presented. When necessary, presentations were made to project stakeholders describing abnormal conditions in the project study area such as the presentation of the high salinity investigation of the Deep Water Ship Channel.

**A list of presentations includes:**

Camarillo, M.K., W.T. Stringfellow, J. Herr, S. Sheeder, S. Gulati, and G. Weissmann. 2014. Computer modeling to promote stakeholder involvement and informed decision-making in a TMDL program. 13th International Water Association (IWA) Specialized Conference on Watershed and River Basin Management, San Francisco, CA, September 9-12.

Gulati, S., A. Stubblefield, J. Hanlon, C. Spier, M.K. Camarillo, and W. Stringfellow. 2014. Mass balance analysis for salts, nutrients, and oxygen-demanding substances in the San Joaquin River. 13th International Water Association (IWA) Specialized Conference on Watershed and River Basin Management, San Francisco, CA, September 9-12.

Camarillo, M.K., W.T. Stringfellow, J. Herr, S. Sheeder, S. Gulati, G. Weissmann, and A. Stubblefield. 2014. Use of a one-dimensional link-node model to develop total maximum daily load strategies for the San Joaquin River Estuary. International Congress on Environmental Modeling and Software (iEMSs), San Diego, CA, June 15-19.

Camarillo, M.K., W.T. Stringfellow, J. Herr, S. Sheeder, S. Gulati, G. Weissmann, and M. Jue. 2014. Use of the WARMF model to identify sources of oxygen impairment and potential management strategies for the San Joaquin River Watershed. International Congress on Environmental Modeling and Software (iEMSs), San Diego, CA, June 15-19.

Gulati, S., Spier, C., Hanlon, J., Stubblefield, A., Jue, M., Camarillo, M.K., Stringfellow, W., Weissmann, G., Garcia, E., Herr, J., Sheeder, S., 2014. Methodologies to evaluate dissolved oxygen impairment in the San Joaquin River for watershed management. Pacific Reserach Day, Stockton, CA, April 26.

Moon, C.R., G. M. Litton, M. S. Brunell, M. Estiandan, W. T. Stringfellow. 2013. Zooplankton-phytoplankton interactions in the San Joaquin River, CA. Coastal and Estuarine Research Federation (CERF) 22nd Biennial Conference, November 3-7, San Diego, California.

Stringfellow, W., Gulati, S., Herr, J., Hanlon, J., Spier, C., Stubblefield, A., Jue, M., Weissmann, G., Sheeder, S., Garcia, E., Camarillo, M.K., 2013. Investigation of Oxygen Consuming Materials Effecting a Dissolved Oxygen TMDL in the San Joaquin River's Deepwater Ship Channel near Stockton, CA, 11th Biennial State of the San Francisco Estuary Conference, Oakland, CA, October 29-30.

Spier, C. L., Stringfellow, W. T., Hanlon, J., Brunell, M., Estiandan, M., Koski, T., Kääriä, J., 2013. Microcystin in the Southern Bay-Delta Estuary and the Upstream San Joaquin River and Possible Negative Impact on the Food Web. Ecological Society of America, 98th Annual Meeting, Minneapolis, MN, August 4-9.

Stringfellow, W. T. 2013. Impact of large-scale water projects and irrigated agriculture on water quality. 7th Workshop on Frontiers of Science Development, Chinese University of Mining & Technology-Beijing, Beijing, P. R. China, May 23.

Spier, C. L., W. T. Stringfellow, J. Hanlon, M. Brunell, M. Estiandan, T. Koski and J. Kääriä (2013). "Unprecedented Bloom of Toxin-Producing Cyanobacteria in the Southern Bay-Delta Estuary has Negative Impact on the Aquatic Food-Web." Interagency Ecological Program, Folsom, CA, April 24-26.

Jung, J. Y., W. Stringfellow, M. K. Camarillo and C. Spier (2013). "Toxic Microcystis Blooms in the Sacramento-San Joaquin Delta Watershed." Pacific Undergraduate Research and Creativity Conference, Stockton, CA, April 20.

Stubblefield, A. A., S. Gulati, J. S. Hanlon, C. L. Spier and W. T. Stringfellow (2013). Comparison of Load Estimation Methods for Calculating Total Maximum Daily Load (TMDL) In Agricultural Watersheds. Pacific Research Day, Stockton, CA, March 18.

Spier, C. L., W. T. Stringfellow, J. Hanlon, M. Brunell, M. Estiandan, T. Koski and J. Kääriä (2013). "Unprecedented Bloom of Toxin-Producing Cyanobacteria in the Southern Bay-Delta Estuary has Negative Impact on the Aquatic Food-Web." Pacific Research Day, Stockton, CA, March 18.

Brunell, M. S., G. M. Litton and W. T. Stringfellow (2012). "Spatial, temporal, and tidal effects on the distribution of zooplankton in the Deep Water Ship Channel of the San Joaquin River, CA." 7th Biennial Bay-Delta Science Conference 2012, Sacramento, CA, October 16-18.

Stringfellow, W. T., M. S. Brunell, T. Koski, J. Hanlon and C. Spier (2012). "Monitoring cyanobacteria, Microcystis, and microcystin in the San Joaquin River Estuary." 7th Biennial Bay-Delta Science Conference 2012, Sacramento, CA, October 16-18.

Brunell, M. S., T. Koski, J. Graham, J. Hanlon, C. Spier, S. Borglin, and W. T. Stringfellow. 2012. Distribution of Microcystis and microcystin in the southern Sacramento-San Joaquin Delta, California, USA. IWA World Water Congress 2012, Busan, Korea, September 16-21.

Gulati, S., J. S. Hanlon, C. L. Spier, and W. T. Stringfellow. 2012. Total maximum daily load (TMDL) estimation using a joint real-time and periodic sampling approach. IWA World Water Congress 2012, Busan, Korea, September 16-21.

Brunell, M. S., Litton, G. M., Quinn, N. W. T., and Stringfellow, W. T. 2012. Variable flow effects on phyto- and zooplankton at the river-estuary transition in the San Joaquin River, CA. 97th Annual Ecological Society of America Meeting, Portland OR, August 5-10.

Stringfellow, W. T., Hanlon, J. S., Brunell, M. S., Spier, C., Kendall, C., Borglin, S., Litton, G. 2012. Direct measurement of phytoplankton growth rate in a eutrophic river reveals phytoplankton response to altered flow regimes. 97th Annual Ecological Society of America Meeting, Portland OR, August 5-10.

Gulati, S., J. S. Hanlon, C. L. Spier and W. T. Stringfellow (2012). "Estimation of total maximum daily load (TMDL) in agricultural watersheds using a combined real-time and periodic sampling approach." National Water Quality Monitoring Council 8th National Monitoring Conference, Portland, OR, April 30-May 4.

Stringfellow, W. T., S. Gulati, J. Hanlon and C. Spier (2012). "Ranking Matrix to Prioritize Watersheds in a TMDL Context." National Water Quality Monitoring Council 8th National Monitoring Conference, Portland, OR, April 30-May 4.

Hanlon, J. S., M. K. Camarillo, A. Stubblefield and W. T. Stringfellow (2012). "Integration of routinely collected municipal monitoring data sets to supplement a regional dissolved oxygen total maximum daily load (TMDL) model." National Water Quality Monitoring Council 8th National Monitoring Conference, Portland, OR, April 30-May 4.

Garcia, E. A., W. Stringfellow and C. Spier (2012). "Solving the Low Dissolved Oxygen Problem by Understanding the Sources & Fate of Different Nitrogen Species Entering in the San Joaquin River Estuary." Pacific Undergraduate Research and Creativity Conference, Stockton, CA. April 21.

Jung, J., W.T. Stringfellow, and M.K. Camarillo. 2012. Toxic Microcystis Blooms in the Sacramento- San Joaquin Delta Watershed. Pacific Undergraduate Research and Creativity Conference, Stockton, California, April 21.

Young, M., T. Harter, C. Kendall and W. Stringfellow (2012). "Using nitrate stable isotopes to identify dominant nitrate sources and processes impacting groundwater and surface water in the Central Valley, California." California Water and Environmental Modeling Forum, 2012 Annual Meeting, Folsom, CA. April 16-18.

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